

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Sandy

Site ID: R069XY026CO

Major Land Resource Area: 69 – Upper Arkansas Valley
Rolling Plains

Physiographic Features

This site occurs on gently sloping to moderately sloping uplands and plains.



Landform: hill, plain, ridge, fan

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3600	6500
Slope (percent):	1	12
Water Table Depth (inches):	60	60
Flooding:		
Frequency:	none	rare
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	slow	medium

Climatic Features

The mean average annual precipitation varies from 10 to 14 inches per year depending on location and ranges from 5 inches to over 24 inches per year. Approximately 75 percent of the annual precipitation occurs during the growing season from mid-April to late-September. Snowfall can vary greatly from year to year and can range from 20 to 40 inches per year. Winds are estimated to average about 6 to 7 miles per hour annually. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 60 miles per hour.

The average length of the growing season is 155 days, but varies from 147 to 162 days. The average date of first frost in the fall is October 10, and the last frost in the spring is about May 5. July is the hottest month and January is the coldest. It is not uncommon for the temperature to exceed 100 degrees F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to as low as -35 degrees F.

Site Type: Rangeland
MLRA: 69 – Upper Arkansas Valley Rolling Plains

Sandy
R069XY026CO

Growth of native cool season plants begins about April 15 and continues to about June 1. Native warm season plants begin growth about May 1 and continue to about August 15. Regrowth of cool season plants occurs in September and October of most years, depending on moisture.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	147	162
Freeze-free period (days):	169	186
Mean Annual Precipitation (inches):	10	14

Average Monthly Precipitation (inches) and Temperature (°F):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.28	0.27	12.1	46.4
February	0.14	0.36	15.3	52.9
March	0.25	0.68	20.7	61.5
April	0.73	1.16	28.9	71.8
May	0.90	2.21	38.6	81.1
June	0.83	1.79	47.6	91.4
July	2.34	2.38	53.4	96.2
August	1.62	2.00	51.7	93.7
September	1.04	1.12	43.3	86.0
October	0.90	0.78	32.2	74.2
November	0.49	0.51	21.0	58.1
December	0.43	0.27	14.1	48.6

Climate Stations		Period	
Station ID	Location or Name	From	To
CO6763	Pueblo Army Depot	1971	2000
CO3828	Haswell	1922	2001
CO7287	Rush	1924	2001
CO4834	Las Animas	1930	2001

For detailed information visit the Western Regional Climate Center at <http://www.wrcc.dri.edu/> website.

Influencing Water Features

Wetland Description:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are very deep but also include moderately deep and deep soils. Typically, they are somewhat excessively drained to well drained and have moderately rapid, moderate or moderately slow permeability. Typically, these soils formed in alluvium and eolian deposits derived from mixed sources. They occur on plains, fans, and terraces. The available water capacity is typically high for the deep and very deep soils and low to moderate for the moderately deep soils. The soil surface layer ranges from 3 to 16 inches thick and is typically sandy loam or very fine sandy loam. The subsoil is typically sandy clay loam, but includes sandy loam or clay loam. The pH ranges from neutral to moderately alkaline in the surface and subsoil, and slightly alkaline to strongly alkaline in the substratum. The soil moisture regime is typically ustic aridic, but ranges to aridic in the driest areas of MLRA 69. The soil temperature regime is mesic.

The Historic Climax Plant Community (HCPC) should portray slight to no evidence of rills. Water flow paths, if present, are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. Wind scoured areas and pedestaled plants may exist in areas but should be minor. The soil surface is stable and intact. Sub-surface soil layers are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site include:

Ascalon, Ascalon dry, Bresser, Fort, Fort Collins, Nelson, Olney, Otero, Oterodry, Satanta, Stoneham, Sundance, Truckton dry, Vona, and Vonid.

Soils that will be correlated to other MLRA's when outdated soil surveys are updated are:

Ascalon, Bresser, Fort Collins, Otero, and Vona. These soils have an aridic ustic moisture regime.

Other soil series that have been correlated to this site include: none

Parent Material Kind: eolian deposits and alluvium

Parent Material Origin: mixed sedimentary

Surface Texture: sandy loam, fine sandy loam, loamy sand, loamy fine sand

Surface Texture Modifier: none, but includes gravelly

Subsurface Texture Group: sandy loam, fine sandy loam, sandy clay loam, clay loam

Surface Fragments $\leq 3''$ (% Cover): 0 to 35 percent

Surface Fragments $> 3''$ (%Cover): 0 to 15 percent

Subsurface Fragments $\leq 3''$ (% Volume): 0 to 35 percent above 40 inches

Subsurface Fragments $> 3''$ (% Volume): 0 to 35 percent above 40 inches

Rock fragments generally average less than 15 percent, but range to 35 percent below a depth of 20 inches.

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	somewhat excessively	well
Permeability Class:	moderately rapid	moderately slow
Depth (inches):	20	60
Electrical Conductivity (mmhos/cm)*:	0	3
Sodium Absorption Ratio*:	0	5
Soil Reaction (1:1 Water)*:	6.8	8.4
Soil Reaction (0.1M CaCl₂)*:	6.4	8.2
Available Water Capacity (inches)*:	2.0	7.0
Calcium Carbonate Equivalent (percent)*:	0	35

*These attributes represent 0-40 inches in depth or to the first restrictive layer.

Plant Communities

Ecological Dynamics of the Site:

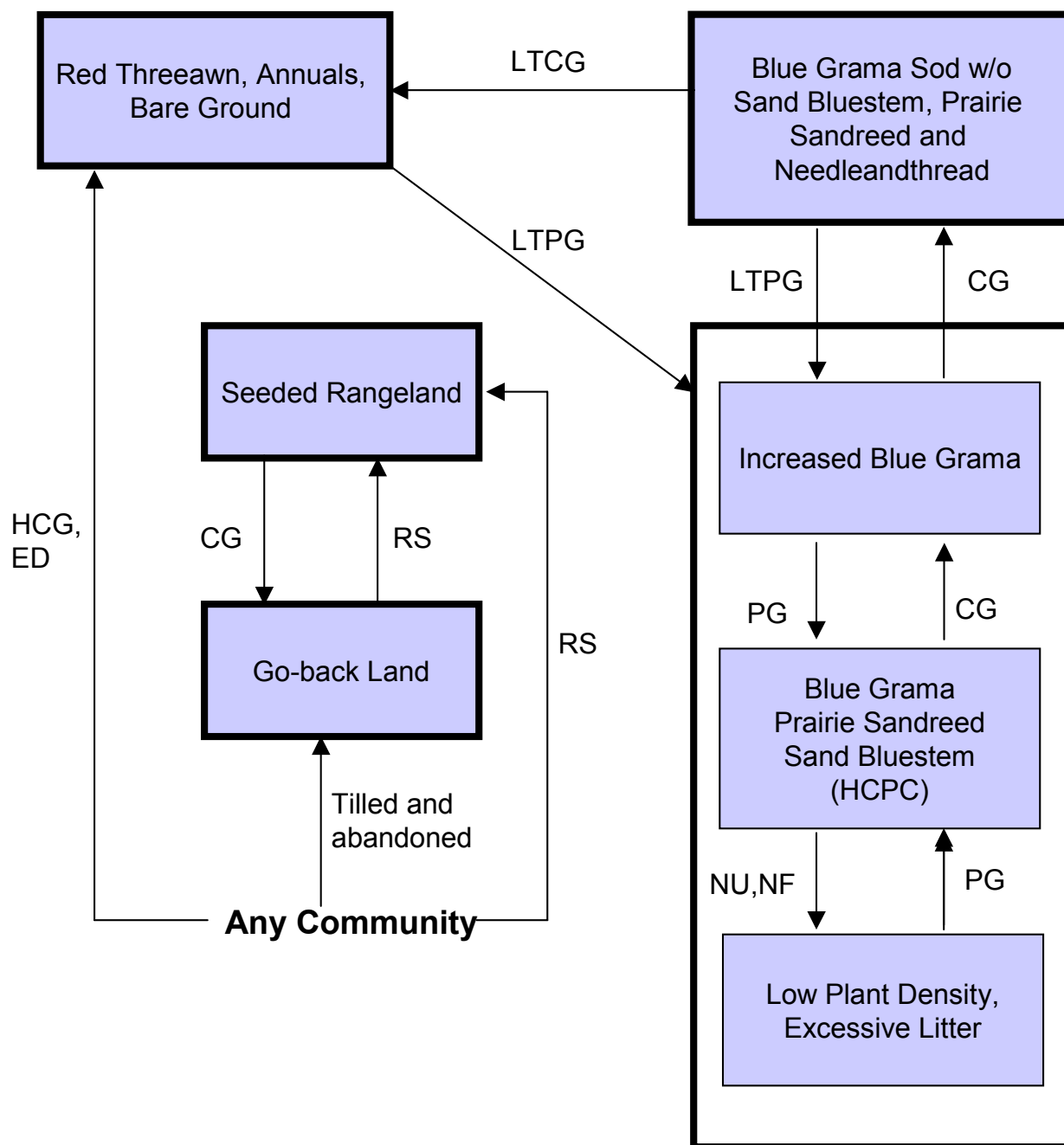
Continuous grazing without adequate recovery opportunities following each grazing event during the growing season will cause blue grama to increase and eventually form a sodbound condition. Major warm season grasses such as sand bluestem, yellow Indiangrass and switchgrass will decrease in frequency and production. Needleandthread will initially increase, then decrease. Key forbs and shrubs such as American vetch, purple prairie clover, scarlet globemallow, western sandcherry and fourwing saltbush will decrease also. Red threeawn, annuals and bare ground will increase with long term continuous grazing, heavy continuous grazing or excessive defoliation. Years of non-use (rest) or lack of fire will cause litter to accumulate and reduce plant density.

Drier and warmer climatic conditions exist in the central portion of MLRA-69. This area includes the eastern half of Pueblo county, northern Otero, extreme northwestern Bent, western edge of Kiowa, southern edge of Lincoln and all of Crowley County. These conditions are primarily caused by a rain shadow effect from the southern Rocky Mountains. Evapotranspiration rates (atmospheric demand) will be higher in this area of MLRA-69. Total annual production will typically be lower.

The historic climax plant community (description follows the plant community diagram) has been determined by study of rangeland relic areas, areas protected from excessive disturbance, seasonal use pastures, short duration/time controlled grazing and historical accounts.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CG - continuous grazing without adequate recovery opportunity, **ED** - excessive defoliation, **HCG** - heavy continuous grazing, **HCPC** - Historic Climax Plant Community, **LTCG** - long term continuous grazing (>25 yrs), **LTPG** - long term prescribed grazing (>40 yrs), **PG** - prescribed grazing with adequate recovery period, **NF** - no fire, **NU** - non-use, **RS** - range seeding

Plant Community Composition and Group Annual Production

			Blue Grama, Prairie Sandreed, Sand Bluestem (HCPC)		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1	840 - 1020	70 - 85
blue grama	Bouteloua gracilis	BOGR2	1	300 - 420	25 - 35
prairie sandreed	Calamovilfa longifolia	CALO	1	120 - 240	10 - 20
sand bluestem	Andropogon hallii	ANHA	1	84 - 180	7 - 15
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	60 - 120	5 - 10
little bluestem	Schizachyrium scoparium	SCSC	1	24 - 84	2 - 7
sideoats grama	Bouteloua curtipendula	BOCU	1	24 - 84	2 - 7
switchgrass	Panicum virgatum	PAVI2	1	24 - 84	2 - 7
western wheatgrass	Pascopyrum smithii	PASM	1	12 - 60	1 - 5
sand dropseed	Sporobolus cryptandrus	SPCR	1	12 - 36	1 - 3
galleta	Pleuraphis jamesii	PLJA	1	0 - 24	0 - 2
Indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 24	0 - 2
Indiangrass	Sorghastrum nutans	SONU2	1	0 - 24	0 - 2
prairie junegrass	Koeleria macrantha	KOMA	1	0 - 24	0 - 2
bottlebrush squirreltail	Elymus elymoides	ELEL5	1	0 - 12	0 - 1
buffalograss	Buchloe dactyloides	BUDA	1	0 - 12	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 12	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	12 - 36	1 - 3
other perennial grasses		2GP	1	12 - 60	1 - 5
FORBS			2	120 - 180	10 - 15
American vetch	Vicia americana	VIAM	2	12 - 24	1 - 2
dotted gayfeather	Liatris punctata	LIPU	2	12 - 24	1 - 2
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	12 - 24	1 - 2
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	12 - 24	1 - 2
Louisiana sagewort	Artemisia ludoviciana	ARLU	2	0 - 24	0 - 2
annual buckwheat	Eriogonum annuum	ERAN4	2	0 - 12	0 - 1
cutleaf evening-primrose	Oenothera coronopifolia	OECO2	2	0 - 12	0 - 1
Fendler cryptantha	Cryptantha fendleri	CRFE3	2	0 - 12	0 - 1
groundplum milkvetch	Astragalus crassicaupus	ASCR2	2	0 - 12	0 - 1
hairy goldaster	Heterotheca villosa	HEVI4	2	0 - 12	0 - 1
heath aster	Symphyotrichum ericoides var. ericoides	SYERE	2	0 - 12	0 - 1
low poppymallow	Callirhoe involucrata	CAIN2	2	0 - 12	0 - 1
narrowleaf penstemon	Penstemon angustifolius	PEAN4	2	0 - 12	0 - 1
Nuttall's evolvulus	Evolvulus nuttallianus	EVNU	2	0 - 12	0 - 1
prairie coneflower	Ratibida columnifera	RACO3	2	0 - 12	0 - 1
prairie spiderwort	Tradescantia occidentalis	TROC	2	0 - 12	0 - 1
pricklypoppy	Argemone polyanthemus	ARPO2	2	0 - 12	0 - 1
rush skeletonplant	Lygodesmia juncea	LYJU	2	0 - 12	0 - 1
sand lily	Leucocrinum montanum	LEMO4	2	0 - 12	0 - 1
silverleaf scurfpea	Pedimelum argophyllum	PEAR6	2	0 - 12	0 - 1
slimflower scurfpea	Psoralea tenuiflorum	PSTE5	2	0 - 12	0 - 1
snowball sand verbena	Abronia fragrans	ABFR2	2	0 - 12	0 - 1
tenpetal blazingstar	Mentzelia decapetala	MEDE2	2	0 - 12	0 - 1
Texas croton	Croton texensis	CRTE4	2	0 - 12	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	2	0 - 12	0 - 1
woolly locoweed	Astragalus mollissimus	ASMO7	2	0 - 12	0 - 1
wormwood	Artemisia dracunculoides	ARDR4	2	0 - 12	0 - 1
other perennial forbs		2FP	2	12 - 36	1 - 3
SHRUBS			3	60 - 180	5 - 15
fourwing saltbush	Atriplex canescens	ATCA2	3	24 - 60	2 - 5
western sandcherry	Prunus pumila var. besseyi	PRPUB	3	12 - 36	1 - 3
sand sagebrush	Artemisia filifolia	ARFI2	3	0 - 36	0 - 3
spreading buckwheat	Eriogonum effusum	EREF	3	12 - 24	1 - 2
false indigo	Amorpha fruticosa	AMFR	3	0 - 24	0 - 2
small soapweed	Yucca glauca	YUGL	3	0 - 24	0 - 2
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 12	0 - 1
fringed sagebrush	Artemisia frigida	ARFR4	3	0 - 12	0 - 1
leadplant	Amorpha canescens	AMCA6	3	0 - 12	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 12	0 - 1
rubber rabbitbrush	Ericameria nauseosa ssp. nauseosa var. nauseosa	ERNAN5	3	0 - 12	0 - 1
other shrubs		2SHRUB	3	12 - 36	1 - 3
Annual Production lbs./acre			LOW RV* HIGH		
GRASSES & GRASS-LIKES			480 -	930 -	1330
FORBS			115 -	150 -	185
SHRUBS			55 -	120 -	185
TOTAL			650 -	1200 -	1700

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. *RV = Representative value.

Plant Community Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition table shown above has been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores, is well suited for grazing by domestic livestock, and can be found on areas that are properly managed with grazing that allows adequate recovery periods following each grazing occurrence during the growing season.

The potential vegetation is about 70-85% grasses and grass-like plants, 10-15% forbs and 5-15% woody plants. The dominant tall warm season grasses are prairie sandreed, sand bluestem and switchgrass. Blue grama dominates the understory. Important cool season grasses and grass-like are needleandthread, western wheatgrass and sun sedge. Key forbs and shrubs are American vetch, purple prairie clover, western sandcherry and fourwing saltbush.

This plant community is well adapted to the Northern Great Plains climatic conditions and is relatively resistant to many disturbances except prolonged continuous grazing, sodbusting, urban and other development. The diversity in plant species allows for high drought tolerance. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. This is a sustainable plant community in terms of soil stability, watershed function and biologic integrity.

Production in this community can vary from 650 to 1700 pounds of air-dry vegetation per acre per year depending on weather conditions and averages 1200 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6905

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	22	35	15	10	3	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events will move this plant community toward the *Increased Blue grama Plant Community*.
- Non-use (rest) or lack of fire will move this plant community toward the *Low Plant Density, Excessive Litter Plant Community*.
- Prescribed grazing that allows adequate recovery opportunity following each grazing event with proper stocking will maintain the *Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community (HCPC)*.

Increased Blue Grama Plant Community

This plant community evolves with continuous grazing. When compared to the Historic Climax Plant Community; sand bluestem, yellow Indiangrass, prairie sandreed, switchgrass, and western sandcherry have decreased in frequency and production. Blue grama is the dominant grass species. Sand dropseed, red threeawn, hairy goldaster, Texas croton, slimflower scurfpea, western ragweed, stickleaf, heath aster, lupine, loco, milkvetch and cactus have increased. Soils that have a sandy loam or coarser subsoil will show an increase in sand sagebrush.

Continuous spring grazing with summer deferment will reduce the cool season component (needleandthread, western wheatgrass, sun sedge) of this plant community and increase the warm season component. Continuous summer grazing with spring deferment will reduce the warm season component (sand bluestem, yellow Indiangrass, prairie sandreed, switchgrass) of this plant community and increase the cool season component.

The risk of losing key tall warm season grasses, important forbs and shrubs is a major concern. Prescribed grazing with adequate recovery periods between grazing events will enable the land user to maintain the vegetation or move it toward the HCPC. Continuous grazing will take this plant community past an ecological/economic threshold resulting in costly revegetation practices or require many years of prescribed grazing to reverse the process.

Blue grama is increasing at the expense of the tall grasses and deep-rooted shrubs. Water cycle, nutrient cycle and energy flow are becoming impaired do to a shift in root structure and species composition. Less litter is being produced. This is an early stage of desertification.

Production in this community can vary from 250 to 900 pounds of air-dry vegetation per acre per year depending on weather conditions and averages 600 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6905

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	22	35	15	10	3	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events will move this plant community across an ecological threshold toward the *Sodbound Blue Grama without Sand Bluestem, Prairie Sandreed and Needleandthread Plant Community*.
- Prescribed grazing that allows adequate recovery periods following grazing occurrences and proper stocking can bring this plant community back to the *Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community (HCPC)*.

Low Plant Density, Excessive Litter Plant Community

This plant community occurs when grazing is removed for long periods of time in the absence of fire. Most of the species occurring in the HCPC are present in this plant community but are reduced in abundance and production. Much of the nutrients are tied up in excessive litter. The semiarid environment and the absence of animal traffic to break down litter slow nutrient recycling. Aboveground litter also limits sunlight from reaching plant crowns. Many plants, especially bunchgrasses die off. Thick litter and absence of grazing or fire reduce seed germination and establishment.

This plant community is at risk of losing many key species and if left ungrazed or ungrazed without fire can go to a vegetative state resembling the *Red Threeawn, Annuals, Bare Ground Plant Community*. This plant community will change rapidly if plant manipulation is allowed to occur (grazing by domestic livestock or possibly fire).

In advanced stages, plant mortality can increase and erosion potential increases as bare ground increases.

Production can vary from 300 to 1200 pounds of air-dry vegetation per acre per year depending on weather conditions and the plants that are present.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6906

Growth curve name: Warm season dominant, cool season sub-dominant, excess litter; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	25	30	15	10	3	2	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing that allows for adequate recovery periods following each grazing event and proper stocking will shift this plant community back to the *Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community (HCPC)*.

Sodbound Blue Grama without Sand Bluestem, Prairie Sandreed and Needleandthread Plant Community

This plant community evolves with longer term continuous grazing caused by lack of adequate recovery periods between grazing events. Sodbound blue grama dominates this plant community. Large amounts of sand dropseed and red threeawn are common. Louisiana sage, lupine, tenpetal blazingstar, Texas croton, hairy goldaster, loco, wormwood, broom snakeweed sage and small soapweed have increased. Sand sagebrush may increase on sandy loam or coarser subsoils. Sand bluestem, prairie sandreed, needleandthread, Indiangrass, switchgrass, western sandcherry and fourwing saltbush have been removed.

A significant amount of production and diversity has been lost when compared to the HCPC. The soil is stable at this stage however, the nutrient cycle, water cycle, community dynamics and energy flow are all impaired do to the substantial increase of blue grama and loss of tall warm season grasses, nitrogen fixing legumes and shrubs. Desertification is advanced.

Production varies from 150 to 500 pounds of air-dry vegetation per acre per year depending on weather and averages 300 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6907

Growth curve name: Warm season dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	30	40	20	5	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Long-term continuous grazing without adequate recovery periods between grazing events will move this plant community to the *Threeawn, Annuals and Bare Ground Plant Community*. This transition may take greater than 25 years to accomplish.
- Long-term prescribed grazing with adequate recovery periods between grazing events and proper stocking will be needed to bring this plant community back to the *Increased Blue Grama Plant Community* and eventually to the *HCPC* assuming an adequate seed/vegetative source is available. This process may take greater than 40 years to accomplish.

Red Threeawn, Annuals, Bare Ground Plant Community

This plant community can develop by long-term continuous grazing, heavy continuous grazing and/or occupation by prairie dogs. Red threeawn is the dominant species. Sand dropseed may also be present in varying amounts. A number of annual plants such as Russian thistle, kochia and cheatgrass will increase or invade. Field bindweed is often present on prairie dog towns.

Litter levels are extremely low. The nutrient cycle, water cycle, and energy flow are greatly reduced. Erosion is occurring. Pedestalling is evident. Organic matter/carbon reserves are greatly reduced. Desertification is obvious.

Production can vary from 50 to 250 pounds of air-dry vegetation per acre per year depending on weather conditions and the plants that are present.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6907

Growth curve name: Warm season dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	30	40	20	5	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Long-term prescribed grazing that allows for adequate recovery periods between each grazing event and proper stocking will be needed to bring this state back to the *Blue Grama, Prairie Sandreed, Sand Bluestem (HCPC)* or associated successional plant community stages assuming an adequate seed/vegetative source is available. Expect this transition to take greater than 40 years to accomplish.
- Range seeding can be used to create *Seeded Rangeland*. Revegetation practices would be very costly.

Go-back Land

Go-back land is created when the soil is tilled or farmed (sodbusted) and abandoned. All of the native plants are destroyed, soil organic matter is reduced, soil structure is changed and a plowpan or compacted layer is formed. Residual synthetic chemicals often remain from past farming operations and erosion processes may be active.

Go-back land evolves through several plant communities beginning with an early annual plant community, which initiates the revegetation process. Plants such as Russian thistle, kochia and other annuals begin to establish. These plants give some protection from erosion and start to build minor levels of soil organic matter. This early annual plant community lasts for two to several years. Red threeawn, sand dropseed and several other early perennials can dominate the plant community for five to eight years or more. Eventually other native species become reestablished.

Transitions or pathways leading to other plant communities are as follows:

- Range seeding followed with prescribed grazing can be used to convert *Go-back Land* to *Seeded Rangeland*.

Seeded Rangeland

This plant community can vary considerable depending on how eroded the soil was, the species seeded, the stand that was established, how long ago the stand was established and the management of the stand since establishment. Prescribed grazing that allows adequate recovery periods following each grazing event will help maintain this plant community and eventually move it towards the HCPC.

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods following each grazing event will move this plant community to the *Threeawn, Annuals, Bare Ground Plant Community* or to a plant community resembling *Go-back Land*.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

The variety of grasses, forbs, and shrubs found on this ecological site in the various plant communities provides habitat for a wide range of wildlife species. Historic large grazers that influenced these plant communities were bison, elk, and pronghorn. Changes over time have resulted in the loss of bison, the reduction in elk numbers, and pronghorn population swings. Domestic grazers now share these habitats with wildlife. The grassland communities of eastern Colorado are home to many bird species. Changes in the composition of the plant community when moving from the HCPC to other communities on this ecological site may result in dramatic species shifts in the bird community. Because of a lack of permanent water, fish and many amphibians are not expected on this ecological site. Mule and white-tailed deer may use this ecological site, however the shrub cover is too low to expect more than occasional use. The gray wolf, black-footed ferret, and wild bison used this ecological site in historic times. The wolf and ferret are thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community (HCPC)

The grasses, forbs, and shrubs in this plant community provide habitat for reptiles such as western rattlesnake and bullsnake. If water is available for breeding, spadefoot toads, tiger salamanders, and garter snakes may be found here. The structural diversity in the plant community on this site provides habitat for Cassin's and Brewer's sparrow, lark bunting, scaled quail. Ferruginous and Swainson's hawks are commonly seen on this site. The combination of mid-tall grasses and shrubs provides habitat for lesser prairie chicken in the eastern part of this ecological site. Small mammals such as white-tailed jackrabbit, badger, swift fox, and several species of mice are common in this plant community. Pronghorn is a typical ungulate found in this community.

Increased Blue Grama Plant Community

All HCPC species are expected in this plant community, however, the loss of some of the vegetative structural diversity in this plant community makes it less attractive to many HCPC species.

Low Plant Density, Excessive Litter; Sodbound Blue Grama; Red Threeawn; and Go-back Land Plant Communities

As these communities develop into an open landscape the wildlife species will shift away from HCPC species and toward the species that prefer unvegetated areas and short plants. Texas short-lizard, six-lined racerunner, and black-tailed jackrabbit would be expected more frequently here than in the HCPC. In addition, mountain plover, black-tailed prairie dog, and burrowing owl might use these communities where slopes are less than 5% and vision is unobstructed.

Seeded Rangeland

The wildlife species expected on seeded rangeland would be those listed for the plant community the seeding most resembles.

Animal Preferences (Quarterly – 1,2,3,4[†])

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-like							
blue grama	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D
bottlebrush squirreltail	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U
buffalograss	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D
dotted gayfeather	U U D U	U D P U	U U D U	U D P U	U D P U	U U D U	U U D U
galleta	N N U N	N N U N	N N U N	N N U N	N N U N	N N U N	N N U N
Indian ricegrass	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D
Indiangrass	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
little bluestem	U D P U	N D D N	U D P U	N D D N	N D D N	U D P U	U D P U
needleandthread	U P D D	N D N D	U P D D	N D N D	N D N D	U P D D	U P D D
prairie junegrass	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
prairie sandreed	U D D U	U D U U	U D D U	U U D U	U U D U	U D D U	U D D U
purple prairie clover	U P P D	U P P U	U P P D	U P P U	U P P U	U P P D	U P P D
ring muhly	N N N N	U U U U	N N N N	U U U U	U U U U	N N N N	N N N N
sand bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
sand dropseed	U D U N	N U D N	U D U N	N U D N	N U D N	U D U N	U D U N
sideoats grama	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U
sun sedge	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
switchgrass	U D D U	U D U U	U D D U	N N N N	N N N N	U D D U	U D D U
western wheatgrass	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
Forbs							
American vetch	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D
annual buckwheat	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
cutleaf evening-primrose	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	U U U U
groundplum milkvetch	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
hairy goldaster	U U D U	N N N N	U U D U	N N N N	N N N N	U U D U	N N N N
Louisiana sagewort	U U U U	U U D U	U U U U	U U D U	U U D U	U U U U	U U D U
low poppymallow	N N N N	N U U N	N N N N	N U U N	N U U N	N N N N	N N N N
narrowleaf penstemon	U D U U	U P P U	U D U U	U P P U	U P P U	U D U U	U P P U
Nuttall's evolvulus	U U D U	U D D U	U U D U	U D D U	U D D U	U U D U	U U D U
prairie coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
prairie spiderwort	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
pricklypoppy	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
rush skeletonplant	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	U U U U
sand lily	U D U U	N U U N	U D U U	N U U N	N U U N	U D U U	N U U N
silverleaf scurfpea	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
slimflower scurfpea	N N N N	N U U N	N N N N	N U U N	N U U N	N N N N	N N N N
snowball sand verberna	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
tenpetal blazingstar	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
Texas croton	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
western ragweed	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U
woolly locoweed	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
wormwood	N N U N	N U U N	N N U N	N U U N	N U U N	N N U N	N N U N
Shrubs							
broom snakeweed	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
false indigo	N U U N	N U U N	N U U N	N U U N	N U U N	N U U N	N U U N
fourwing saltbush	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P
fringed sagebrush	U N N U	U D D U	U N N U	U D D U	U D D U	U N N U	U N N U
leadplant	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U
rubber rabbitbrush	N N N D	D D D D	N N N D	D D D D	D D D D	N N N D	N N N D
sand sagebrush	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U
small soapweed	D P N D	D P N D	D P N D	D P N D	D P N D	D P N D	D P N D
spreading buckwheat	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
western sandcherry	D P P D	D U U D	D P P D	P U D P	D U U D	D P P D	P U U P

N = not used; U = undesirable; D = desirable; P = preferred; T = toxic

[†] Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) with normal growing conditions however, *continuous grazing is not recommended*. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community	Production (lbs./acre)	Stocking Rate (AUM/acre)
Blue Grama, Prairie Sandreed, Sand Bluestem (HCPC)	1200	0.38
Increased Blue Grama	600	0.19
Blue Grama Sod w/o Sand Bluestem, Sandreed, Needleandthread	300	0.09
Low Plant Density, Excessive Litter	*	*
Red Threeawn, Annuals, Bare Ground	*	*

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable analysis.

* Highly variable; stocking rate needs to be determined on site.

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group A. Infiltration and runoff potential for this site varies from high to moderate depending on soil hydrologic group and ground cover. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

- (069XY019CO) – Sands (formerly Deep Sands)
- (069XY021CO) – Choppy Sands
- (069XY006CO) – Loamy (formerly Loamy Plains)

Similar Sites

- (069XY019CO) – Sands (formerly Deep Sands)
[higher production; more sand bluestem and sand sagebrush]
- (069XY021CO) – Choppy Sands
[steep slopes, more western sandcherry]

Inventory Data References

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site description include: Ben Berlinger, Rangeland Management Specialist, NRCS; Scott Woodall, Rangeland Management Specialist, NRCS; Lee Neve, Soil Scientist, NRCS; Julie Elliott, Rangeland Management Specialist, NRCS; Terri Skadeland, Biologist, NRCS.

State Correlation

This site is specific to Colorado (formerly Sandy Plains).

Field Offices

Canon City, Colorado Springs, Cheyenne Wells, Eads, Holly, Hugo, Lamar, Las Animas, Pueblo, Rocky Ford, Simla, Springfield, Trinidad, Walsenburg

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://hpcc.unl.edu>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://wcc.nrcs.usda.gov>)

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Site Description Approval

/s/

03/25/2004

State Range Management Specialist

Date